Strategic Initiative 1 – Accelerate Silos 1&2

Subproject Description

Silos 1&2, two concrete silos located on the western periphery of the site, contain 8,890 cubic yards of low-level wastes that remained after extraction of uranium from pitchblende ores received from the Belgian Congo. Over half of these radium-bearing residues, which date back to the 1950s, were originally generated at the Mallinckrodt Chemical Works in Saint Louis and then shipped to Fernald for storage. The remaining residues were generated at Fernald during the processing of these same ores. In 1964, an earthen berm was placed around Silos 1&2 to reinforce the structural integrity of each silo.

Based on the approved Record of Decision for Operable Unit 4, the cleanup remedy for Silos 1&2 requires removal of the wastes from the concrete silos followed by chemical stabilization and off-site disposal at the Nevada Test Site.

Execution Strategy

The execution strategy in the revised 2006 baseline for the remediation of the Silos 1&2 contents includes transferring the waste to tanks for staging, treating the waste by chemical stabilization, and shipping the stabilized material off site for disposal. The material in Silos 1&2 will be transferred to the new Transfer Tank Area for safe interim storage pending final treatment and disposal. The work also includes construction of a radon control system to mitigate radon emissions from the silos, the Transfer Tank Area, and the future Silos 1&2 full-scale remediation facility.

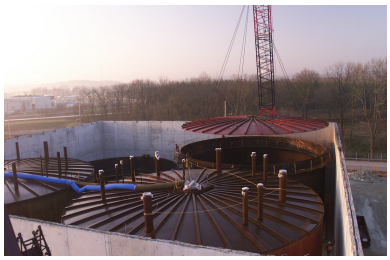
The treatment facility will consist of a slurry receipt system to receive the transferred material from the Transfer Tank Area, a chemical stabilization facility to treat Silos 1&2 material, and a system to containerize the treated material. Chemical stabilization is defined as a non-thermal treatment process that mixes the Silos 1&2 material with chemical additives to accomplish chemical and physical binding of the constituents of concern. These processes provide reduction in contaminant mobility by chemically stabilizing contaminants into a leach-resistant form. The treatment facility will also have an interim storage area for curing and staging the treated material while awaiting approval for disposal and an air emissions control system for control of radionuclide particulate emissions from the treatment process. Both the Transfer Tank Area and the treatment facility are connected to the radon control system for control of radon emissions from the remediation process.

The design is being performed by Jacobs Engineering (a Fluor Fernald teaming partner) and will utilize "off-the-shelf" hydraulic retrieval systems and stabilization equipment to handle the waste. A parallel review cycle for stakeholders is planned to reduce the overall duration of the final design. In addition, early procurement of long-lead components is planned to ensure that construction will begin on schedule. This allows Jacobs Engineering to engage key treatment component vendors in the design process, which will ensure compatibility of key components with the balance of plant design. Early design packages will be issued for procurement of non-treatment related components (e.g., warehouses) concurrent with final design to accelerate the overall construction schedule. Fluor Fernald will provide construction management and direct the operations, transportation, and shipment activities.

New Strategies to Achieve 2006 Closure

In order to accelerate site closure from 2009 to 2006, the following initiatives were developed for the Silos 1&2 subproject:

- Dispose of the treated Silos 1&2 material at a permitted off-site commercial disposal facility rather than the Nevada Test Site, which provides for disposal cost savings and enhances transportation logistics
- Utilize bulk transport by rail, which is safer and more cost-effective than truck shipments
- Accelerate the design, procurement, and construction of the treatment facility by earlier vendor involvement and early release of design packages for procurement of non-treatment-related facilities and components



In order to accelerate the off-site disposition of the Silos 1&2 waste, DOE will pursue a modification to the Operable Unit 4 Record of Decision to permit disposal of Silos 1&2 materials as 11e.(2) waste at Envirocare in Utah. This action reduces the complexity of the silos shipping program and permits the bulk shipping of silos wastes by rail. Rail transport reduces cost and schedule risk associated with activities on the critical path. Efforts are underway to work with local stakeholders, Ohio EPA, and U.S. EPA to gain concurrence for this initiative.

The modification to the Record of Decision will be pursued in conjunction with an NRC license modification that permits disposal of Silos 1&2 wastes in Envirocare's 11e.(2) disposal cell. Envirocare is in the process of preparing a waste-specific license modification for submittal to the NRC, requesting approval to raise the facility's radium-226 waste acceptance criteria limit from 4,000 pCi/g to 100,000 pCi/g to accommodate Fernald's wastes. This approval is contingent upon Envirocare's ability to demonstrate the protectiveness of the cell design at the higher radium concentrations.

Treatment of Silos 1&2 material will result in the production of about 7,500 containers weighing 21,000 pounds each. Under the revised plan, seven containers will be placed into each gondola car resulting in the need for 1,072 gondola car shipments. A unit train will consist of 60 gondola cars, so 18 dedicated unit train shipments to Envirocare are envisioned. Contaminated soil underlying the Silos 1&2 treatment facility will be removed prior to construction to streamline post-remediation certification of the area.

In addition to the remediation of Silos 1&2 contents, the subproject will consist of the safe shutdown and demolition of the concrete Silos 1&2 structures. The scope also includes facility shutdown of associated waste removal and treatment facilities prior to turnover of the treatment facilities to the Facility D&D subproject.

Current Subproject Status

Subproject Status:

- Design is 21% complete
- Overall subproject is 7% complete
- Accelerated Waste Retrieval Facility is being constructed
- Startup of stabilization facility is scheduled for May 2003
- Waste disposal at Envirocare is scheduled for April 2005
- Cost to Complete: $281 million
- Subproject will be complete in May 2006

The remedial design is 21% complete and the overall subproject is 7% complete. Construction is currently underway on the Transfer Tank Area and Radon Control System. Construction of four 750,000-gallon transfer tanks is complete and coating of the interior and exterior of the tanks is underway. The Transfer Tank Area will be complete in late summer 2002. Construction is progressing in all areas of the Radon Control System. Specifically, four carbon beds have been installed and are ready to be filled, the primary electrical system will be turned over to start-up in early July 2002, and piping and ductwork systems are being installed. Following completion of the remedial design, the waste treatment facilities and associated warehouses, rail spur, and loadout facilities will be constructed and operated. The subproject will be complete in May 2006.

Key Actions and Responsibilities

The following table lists the key actions needed to accelerate the Silos 1&2 subproject to meet 2006 site closure. Also included are the responsible organizations, the status of the key action, and the date that the key action is needed. The key actions for all eight strategic initiatives are compiled in Attachment 2.

Key Actions and Responsibilities for Silos 1&2

Action	Responsibility	Status	Date Needed
Reduce overall duration of final design through parallel review cycle for stakeholders	Fluor Fernald	Complete	–
Engage key treatment component vendors in Silos 1&2 design process	Fluor Fernald	In progress	12/31/02
Early procurement of long-lead components	Fluor Fernald	In progress	12/31/02
Issue early design packages to construction during Silos 1&2 process design for non-treatment-related components	Fluor Fernald	In progress	12/31/02
Amend the Record of Decision to permit disposal of Silos 1&2 materials as 11e.(2) waste at Envirocare in Utah	DOE-OH and Fluor Fernald	In progress	9/1/03
Gain NRC approval of a license modification to permit disposal of Silos 1&2 waste in Envirocare's 11e.(2) disposal cell	DOE-HQ, DOE-OH, and Fluor Fernald	In progress	2/1/04